Exhibit 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioners,

v.

NEONODE SMARTPHONE LLC,
Patent Owner,

Case IPR2021-01041
Patent 8,095,879

EXHIBIT 2019

SECOND DECLARATION OF CRAIG ROSENBERG, PH.D.

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I. INTRODUCTION

I, Craig Rosenberg, declare as follows:

1. I have been retained on behalf of Neonode Smartphone LLC ("Neonode" and/or "Patent Owner") for the above-captioned *inter partes* review to provide my expert opinions and expert knowledge. I understand that this proceeding involves U.S. Patent No. 8,095,879 ("the '879 patent"). I understand that the '879 patent is currently assigned to Neonode.

2. I understand that the present Petition for *inter partes* review challenges claims 1-7, 9, 12-13, 15-17 ("the challenged claims" or "claims") of the '879 patent and was filed by Petitioner Google Inc. ("Petitioner").

3. I have been asked to provide my independent review, analysis, insights, and opinions regarding technical aspects of the '879 patent and the Petition challenging the patentability of its claims. In particular, I have been asked to provide my analysis, insights, and opinions regarding the state of the art at the time of the alleged invention and how a person of ordinary skill in the art would have understood the '443 patent disclosure at that time.

4. In preparing this declaration, I have reviewed all of the references cited herein and in the Petition. In particular, I have reviewed and am familiar with the '879 patent and its prosecution history, and the references cited against it, discussed further below.

5. In this declaration, I set forth the independent opinions that I have reached and the basis for those opinions in view of the information currently available to me. Such opinions are based, at least in part, on my knowledge, experience, education, and trialing over the past thirty four years in the areas of human factors, human computer interaction, and user interfaces. I reserve the right to supplement or revise my opinions should additional documents or other information be provided to me.

6. I am being compensated at an hourly rate of $450/hour for my work on this case. My compensation is not dependent upon my opinions, my testimony, or the outcome of this case.

II. QUALIFICATIONS

7. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. In forming my opinions I have relied on my knowledge and experience in human factors, user interface design, user interaction design, human-computer interaction, and software engineering.

8. My qualifications to testify about the '879 patent and the relevant technology are set forth in my curriculum vitae ("CV"), which I have included as Ex. 2002. In addition, a brief summary of my qualifications is included below:

9. I hold a Bachelor of Science in Industrial Engineering, a Master of Science in Human Factors, and a Ph.D. in Human Factors from the University of

Washington School of Engineering. For 30 years, I have worked in the areas of human factors, user interface design, software development, software architecture, systems engineering, and modeling and simulation across a wide variety of application areas, including aerospace, communications, entertainment, and healthcare.

10. I graduated from the University of Washington in 1988 with a B.S. in Industrial Engineering. After graduation, I continued my studies at the University of Washington. In 1990, I obtained an M.S. in Human Factors. In 1994, I graduated with a Ph.D. in Human Factors. In the course of my doctoral studies, I worked as an Associate Assistant Human Factors Professor at the University of Washington Industrial Engineering Department. My duties included teaching, writing research proposals, designing and conducting funded human factors experiments for the National Science Foundation, as well as hiring and supervising students. While studying at the University of Washington, I also worked as a human factors researcher and designed and performed advanced human factors experiments relating to virtual environments and interface design, stereoscopic displays, and advanced visualization research, which was funded by the National Science Foundation. My duties included user interface design, systems design, software development, graphics programming, experimental design, as well as hardware and software interfacing.

11. I have published twenty-one research papers in professional journals and proceedings in the areas of user interface design, computer graphics, and the design of spatial, stereographic, and auditory displays. I also authored a book chapter on augmented reality displays in the book "Virtual Environments and Advanced Interface Design" (Oxford University Press, 1995). In addition, I created one of the first virtual spatial musical instruments called the MIDIBIRD that utilized the MIDI protocol, two six-dimensional spatial trackers, a music synthesizer, and a computer graphics workstation to create an advanced and novel musical instrument.

12. For the past 21 years, I have served as a consultant for Global Technica, Sunny Day Software, Stanley Associates, Techrizon, CDI Corporation, and the Barr Group. In this capacity, I have provided advanced engineering services for many companies.

13. I consulted for the Boeing Company for over 16 years as a senior human factors engineer, user interface designer, and software architect for a wide range of advanced commercial and military programs. Many of the projects that I have been involved with include advanced software development, user interface design, agent-based software, and modeling and simulations in the areas of missile defense, homeland security, battle command management, computer aided design, networking and communications, air traffic control, location-based services, and Unmanned Aerial Vehicle ("UAV") command and control. Additionally, I was the

lead system architect developing advanced air traffic controller workstations and air traffic control analysis applications, toolsets, and trade study simulations for Boeing Air Traffic Management.

14. I was also the architect of the Boeing Human Agent Model. The Boeing Human Agent Model is an advanced model for the simulation of human sensory, cognitive, and motor performance as applied to the roles of air traffic controllers, pilots, and UAV operators. In another project, I was the lead human factors engineer and user interface designer for Boeing's main vector and raster computer aided drafting and editing system that produces the maintenance manuals, shop floor illustrations, and service bulletins for aircraft produced by the Boeing Commercial Aircraft Company. Additional responsibilities in my time as a consultant include system engineering, requirements analysis, functional specification, use case development, user stories, application prototyping, modeling and simulation, object-oriented software architecture, graphical user interface analysis and design, as well as UML, C++, C#, and Java software development.

15. In 1995 and 1996, I was hired as the lead human factors engineer and user interface designer for the first two-way pager produced by AT&T. Prior to this technology, people could receive pages but had no way to respond utilizing their pager. This new technology allowed users to use a small handheld device to receive and send canned or custom text messages, access and update an address book, and

access and update a personal calendar. This high-profile project involved designing the entire feature set, user interface/user interaction design and specification, as well as all graphical design and graphical design standards.

16. From 1999–2001, I was the lead human factors engineer and user interface designer for a company called Eyematic Interfaces that was responsible for all user interface design and development activities associated with real-time mobile handheld 3D facial tracking, animation, avatar creation and editing software for a product for Mattel. My work involved user interface design, human factors analysis, requirements gathering and analysis, and functional specifications.

17. In 2001, I was the lead user interface designer for a company called Ahaza that was building IPv6 routers. I designed the user interfaces for the configuration and control of these advanced network hardware devices. My responsibilities included requirements analysis, functional specification, user interface design, user experience design, and human factors analysis.

18. In 2006-07, I was the lead user interface designer for a company called ObjectSpeed that developed a portable handheld telephone for use in homes and businesses that had many of the same capabilities that we take for granted in mobile cellular phones. This portable multifunction device supported voice, email, chat, video conferencing, internet radio, streaming media, Microsoft Outlook integration,

photo taking and sharing, etc. The ObjectSpeed device was specifically designed and developed as a portable handheld device.

19. I am the founder, inventor, user interface designer, and software architect of WhereWuz. WhereWuz is a company that produces advanced mobile software running on GPS-enabled smartphones and handheld devices. WhereWuz allows users to record exactly where they have been and query this data in unique ways for subsequent retrieval based on time or location. WhereWuz was specifically designed and developed to run on small handheld devices.

20. I am the co-founder of a medical technology company called Healium. Healium developed advanced wearable and handheld user interface technology to allow physicians to more effectively interact with electronic medical records.

21. I am the co-founder of a medical technology company called StratoScientific. StratoScientific is developing an innovative case for a smartphone that turns a standard handheld smartphone into a full featured digital stethoscope that incorporates visualization and machine learning that can be utilized for telemedicine and automated diagnosis.

22. In 2012-13, I designed and developed a large software project for Disney World called xVR that allowed the operational employees of Disney World to utilize a handheld device to view the current and historical status of all of the guests of Disney World within multiple attractions as well as within one of their

restaurants. The application could run in a real-time/live mode where it would display data collected from sensors that showed the location and status of all guests within the attraction; the application could also be run in a fast-time/simulated mode. The application was developed on a laptop computer and was specifically designed to run on a variety of devices, including laptops, PCs, smartphones, and tablets.

23. I have received several awards for my engineering work relating to interface design, computer graphics, and the design of spatial, stereographic, and auditory displays, including a $10,000 scholarship from the I/ITSEC for advancing the field of interactive computer graphics for flight simulation and a Link Foundation award for furthering the field of flight simulation and virtual interface design. I have also created graphics for several popular book covers as well as animations for a movie produced by MIRAMAR.

III. APPLICABLE LEGAL STANDARDS

24. When considering the '879 patent and stating my opinions, I rely on the following legal standards as described to me by the attorneys for Neonode.

A. Priority Date of the Patent

25. I understand that the analysis of alleged obviousness of the Patent should be performed from the perspective of a POSITA as of the priority date of the Patent. The Patent was filed on December 10, 2002. My opinions in this

matter are from the perspective of a POSITA as of that date; however, my opinions do not change if the priority date is slightly changed.

B. Level of Ordinary Skill in the Art

26. I understand that various factors should be considered when determining the person of ordinary skill in the art in connection with a particular patent. I understand that these include, without limitation: (a) the educational level of the inventors and that of practitioners and other inventors in the art (e.g., degrees, subjects, etc.); (b) the type of problems encountered in the art; (c) prior art solutions to such problems; (d) the speed at which innovations are made in the art; and (e) the sophistication of the invention.

27. Dr. Wobbrock opines that a "a person of ordinary skill in the art of the '879 patent as of its filing date would have at least a bachelor's degree in Computer Science, Human-Computer Interaction, Symbolic Systems, or related engineering disciplines, and at least two years of experience designing and programming graphical user interfaces. In my opinion, relevant work experience can substitute for formal education and advanced degree studies could substitute for work experience." Ex. 1003 [Wobbrock-Decl.] ¶ 49. For the purpose of this declaration, I will apply the same definition of the level of skill of a POSITA.

28. Based on my experience, education, and training, I met the definition of a POSITA in December of 2002, the time of filing of the application that issued as

the '879 Patent. I also had greater knowledge and experience than a POSITA. I worked with POSAs in 2002, and I am able to render opinions from the perspective of a POSITA based on my knowledge and experience. My opinions concerning the '879 Patent claims and the prior art are from the perspective of a POSITA, as set forth above.

29. As further discussed below, my opinions as stated in this declaration are valid even if the Board adopts a slightly different level of ordinary skill in the art.

C. My Understanding of Legal Standards

30. I understand that a patent claim is unpatentable if the claimed invention would have been obvious to a person of ordinary skill in the art at the time of the purported invention.

31. I understand that an obviousness analysis involves comparing a claim to the prior art to determine whether the claimed invention would have been obvious to a person of ordinary skill in the art at the time of the invention in view of the prior art and in light of the general knowledge in the art as a whole. I also understand that obviousness is ultimately a legal conclusion based on underlying facts of four general types, all of which must be considered: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences

between the claimed invention and the prior art; and (4) any objective indicia of non-obviousness.

32. I also understand that obviousness may be established under certain circumstances by combining or modifying the teachings of the prior art. Specific teachings, suggestions, or motivations to combine any first prior art reference with a second prior art reference can be explicit or implicit, but must have existed before the date of purported invention. I understand that prior art references themselves may be one source of a specific teaching or suggestion to combine features of the prior art, but that such suggestions or motivations to combine art may come from the knowledge that a person of ordinary skill in the art would have had.

33. I understand that a reference may be relied upon for all that it teaches, including uses beyond its primary purpose, but also including teachings that lead away from the invention. I understand that a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, although the mere disclosure of alternative designs does not teach away.

34. I further understand that whether there is a reasonable expectation of success from combining references in a particular way is also relevant to the analysis.

35. I understand that it is improper to use hindsight to combine references or elements of references to reconstruct the invention using the claims as a guide. My analysis of the prior art is made from the perspective of a person of ordinary skill in the art at the time of the invention.

36. I am not offering any legal opinions in this declaration nor am I qualified to do so. I only consider such legal standards in framing my opinions and conclusions as well as placing assertions made by Petitioner in the Petition into the proper context. Additionally, from a subject matter perspective, I understand that the petitioner always has the burden of persuasion regarding a challenge of patentability of an invention under an inter partes review.

IV. OPINIONS

A. Objective Evidence Of Non-Obviousness.

37. I understand that Neonode's N1 phone was introduced in Spring 2002 and commercially sold starting in 2004. I further understand that Neonode's N2 phone was sold starting in 2054. Ex. 2022, ¶ 6.

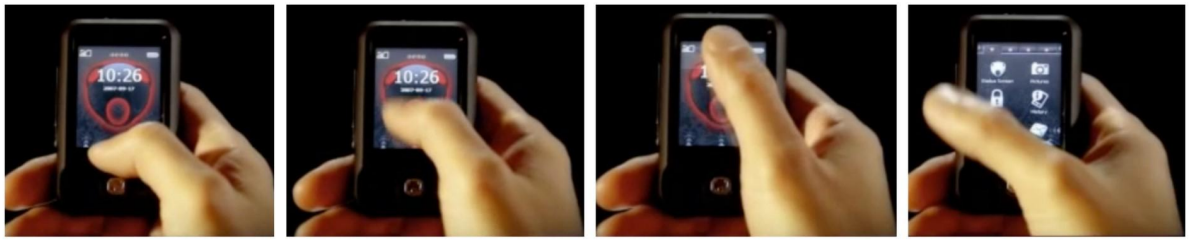
38. I have reviewed Neonode's promotional material, which highlight the phone's swipe-based user interface. Neonode specifically touted its "specially designed interface" that allows "you to easily access the different applications with simple sweeping gestures ... on the screen." Ex. 2020 [N2 Advertisement Video] (00:27-00:35); *see also id.*, (00:45-00:51) ("And you can easily access all of the

Neonode N2's content using the seven available sweeps."). As Neonode explained, "there is nothing else you need other than your intuition." *Id.*, (01:25-01:27).

39. From my review of Neonode's promotional video and other materials, the "swipe" gesture of Neonode's user interfaces in the N1 and N2 phones is covered by claim 1. The claimed inventions concern a user interface for a mobile handheld computer unit that includes a touch sensitive area that includes a representation of a function wherein the representation consists of only one option for activating the function wherein an object (*e.g.*, a finger) touches the touch sensitive area where the representation is provided and then the "object," the finger in our example, "***glid[es] along the touch sensitive area away*** from the touched location, wherein the representation of the function is not relocated or duplicated ***during the gliding***." I have also reviewed the Shain Declaration (Ex. 2008), and his testimony further confirms that the N1 and N2 devices practiced the claim 1 limitations:

> Both the Neonode N1 and N2 presented three icons in a strip along the lower edge of the display immediately following unlocking of the phone. One of the icons represented the Start Menu, one represented the Keyboard Menu, and the third represented the Tools Menu. Each of the icons consisted of only one option for activating the associated function. Each of the icons were activatable by a gesture in which a thumb or finger touches the icon, and swipes up toward the center of the screen before lifting off of the screen. None of the icons were relocated or duplicated during the swiping gesture.

40. The Applicant also equated the "gliding ... away" motion with "swiping." Ex. 1002 [Prosecution-History] 273 ("the touch-and-glide thumb movement, variously referred to as 'swiping,' ... 'gliding' ..."); 390 (similar). The Applicant also specifically referenced and provided a link to its promotional video for a commercial embodiment, the Neonode N2 phone, and asked the Examiner to "view the demonstration video … prior to reviewing Applicant's arguments …." Ex. 1002 [Prosecution-History] 214-215; Ex. 2020 [N2-Advertisement-Video]. As the screen shots below from the video show, the "gliding … away" gesture is similar to what many of today's systems refer to as a "swipe" gesture and is distinct from a drag-and-drop operation. Specifically, the thumb is placed on a representation of a function (an arrow) and through a swiping motion, the menu screen opens:



See Ex. 2020 [N2-Advertisement-Video] (screenshots from 00:26-00:27).

41. Such gliding corresponds to what is shown, for instance, in Figure 2 which shows a thumb gliding along the touchscreen:

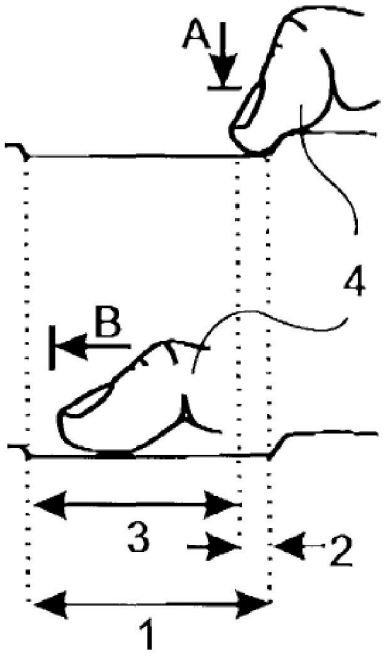


Fig. 2.

42. Moreover, there is striking similarity between the '879 Patent's figures and Neonode's N1 and N2 phones:

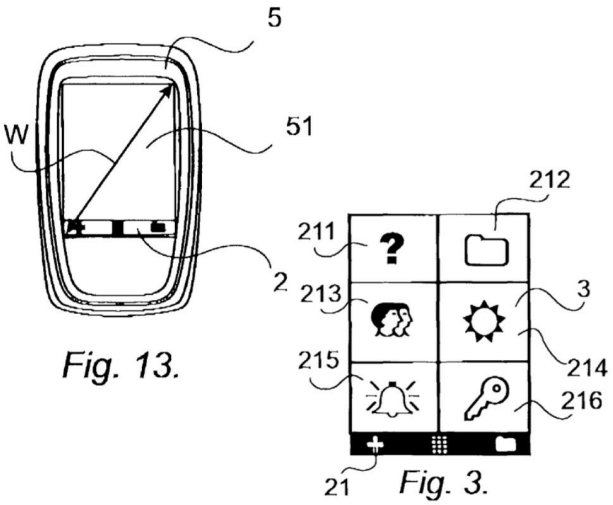


Fig. 13. Fig. 3.

Ex. 1001 ['879] Figs. 3, 13; Ex. 2039 [PhD-Dissertation] 9, Figure 11.

43. I further have reviewed material showing praise for Neonode's swiping user interface. For example, Pen Computing Magazine described Neonode N1 phone's swipe as "simple and brilliant" and different from the "dreaded gestures" of the pen computing devices (like Petitioner's Hirayama-307):

> **Swipe, swipe, swipe**
>
> You see, instead of the usual menus and pulldowns, most operations are performed by sweeps of your finger—usually your thumb—across the surface of the Neonode's display. […] ***If this sounds like the dreaded "gestures" that never really caught on in pen computing, it's not***. The swipes are much simpler, there are only a few, and they are consistently used throughout all applications. The idea here is to let you hold a phone in the palm of your hand and operate it entirely with your thumb. ***No need to*** push buttons, view tiny menus, ***pull out a tiny stylus***, or use scroll wheels, rockers or other such vexing miniature controls. […] ***Neonode's swiping interface is [] simple and brilliant***.

Ex. 2013, 2-3; *id.*, 5 ("What's the bottomline? ***The Neonode phone is quite obviously unique***, ... ***The user interface is compelling*** and it's easy to see how just a bit more development could provide almost total consistency and thus ***a user experience simpler than pretty much anything else that comes to mind. The speed is simply amazing. That's the way a phone should operate***.").

44. I have also reviewed material showing praise of Neonode's swipe-based user interface by various technology observers. Exs. 2033, 1 ("I've been playing

with my N1m on and off, and I'm very impressed! It's definitely a best kept secret device – Neonode's touch-based user interface with gesture recognition ... is extremely intuitive ..."); 2031, 1 ("[The N2] has the most advanced touchscreen available, and has no buttons ... 'Neonode N2 is designed for advanced simplicity. You do everything on-screen, simply and conveniently, with just one finger, Infibeam says. 'The combination of an optical touch screen and specifically designed user interface makes access to all features and content of your Neonode N2 both quick and easy.'"); 2032, 2034; Ex. 2035 [iPhone-Killer] 2 ("the N2 from Neonode Inc. – is the strongest contender for the title of 'iPhone killer,' ... 'They've come out with a kick-ass device'... the [N1's] screen reacts to the intuitive passage of a finger over the screen to initiate basic phone, Web browser and multimedia functions.").

45. I have also reviewed testimony that Senior management at Samsung's mobile telecom division were extremely impressed by Neonode's N1, and in early 2005 began discussions with Neonode about licensing the N1's gesture-based user interface and touch screen technology. Ex. 2055, ¶ 9. Ki-Tai Lee (K. T. Lee), head of Samsung's mobile telecom division, presciently told Neonode that he believed Neonode's intuitive user interface was "the future of mobile phones." *Id.* Neonode had many hours of meetings with Samsung, including a meeting in London, attended by Marcus Bäcklund, Thomas Ericsson, and Per Bystedt. *Id.* Mr. Lee told

Samsung's negotiators—in Neonode's presence—that "we need this," referring to the Neonode's N1 gesture-based user interface and the license for the user interface. *Id.* I further understand that Samsung subsequently signed a licensing agreement with Neonode in 2005, and the licensing agreement covered, among other things, the application that ultimately issued as the '879 patent. Ex. 2014, ¶ 10; Ex. 2056, ¶¶ 13-14.

46. I have further reviewed evidence demonstrating the belief among the technology observers that when Apple introduced the first iPhone in 2007 (*see* Ex. 2036)[1], its swiping gestures resembled that of Neonode. For example, Pen Computing Magazine wrote:

> Listening to Apple's claims of all the patents covering the iPhone's user interface one might assume the iPhone broke completely new ground and went where no phone had ever gone before.
>
> That is not entirely so. Neonode, a small Swedish company ... announced the Neonode N1 back in 2002. ... It did not use a stylus either. Instead, it used a swipe and tap system on a novel touch screen that used a grid of infrared beams to sense finger movement.
>
> ... And if the iPhone's swipes and taps seem futuristic, they are not. Neonode has been using them since the first N1 came out. In fact, the company's Neno user interface is based entirely on swipes and taps.

[1] The first commercial phone utilizing Petitioner's Android operating system was not released until September 2008. Ex. 2037 [Wikipedia-Android-Operating-System] 1.

Ex. 2024, 1. The author followed,

> [I]t must be vexing to see Apple essentially claim ownership of concepts the Neonode phone has been using for at least five years.

Id., 9.

47. I have also reviewed online videos made by the public about how Neonode's "sweeping touch screen" was the "original," to the iPhone "copycat":

Ex. 2038 [User-Video] (at 0:04, 0:06, 0:12, and 0:17).

48. I have also reviewed a Ph.D. dissertation and a Master's thesis that described Neonode as "the first smartphone to use a touchscreen as primary input

and to support touch gestures for several functions," (Ex. 2039, 9), and "The Neonode N1 was the first commercially available mobile device to make extensive use of swipe gestures appropriate for one-handed use, including a browser that scrolled content vertically with swipes," (Ex. 2040, 8).

49. I have also reviewed testimony about commercial sales of Neonode phones, explaining that Neonode sold tens of thousands of its N1 and N2 phones to various operators around the world, including Mexico, Belgium and India. Ex. 2054, ¶ 6; Ex. 2010; Ex. 2014; Ex. 2055, ¶ 11; Ex. 2056, ¶¶ 8-10. I understand that, as a small startup company without the backing of any major carrier, and with limited manufacturing experience, Neonode phones were priced up to $1,000, which is many times more expensive than the typical luxury phones of its time. *Id.*

50. The above evidence, showing praise by industry observers, competitors and users, further support my conclusions below that the claims were not obvious at the time of the invention.

B. The Robertson-Grounds (Grounds 1-3).

1. Robertson Is Not Analogous Art To The '879 Patent.

51. Grounds 1-3 rely on the Robertson reference to render the claims obvious. Pet., 1-2. Based on the law regarding analogous art as explained to me by Neonode attorneys and summarized below, it is my opinion that Dr. Wobbrock has not shown Robertson to be analogous art to the '879 Patent.

52. I understand that in order to be eligible as prior art and therefore form a reference in one of the instituted grounds, a reference must be analogous art to the '879 Patent. I also understand that it is Petitioner's burden to prove that Robertson is analogous art to the '879 Patent. I am informed that in order to determine whether a reference such as Robertson is analogous art to the '879 Patent, a two-part test is applied as follows:

> Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

In re Bigio, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *see also In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992).

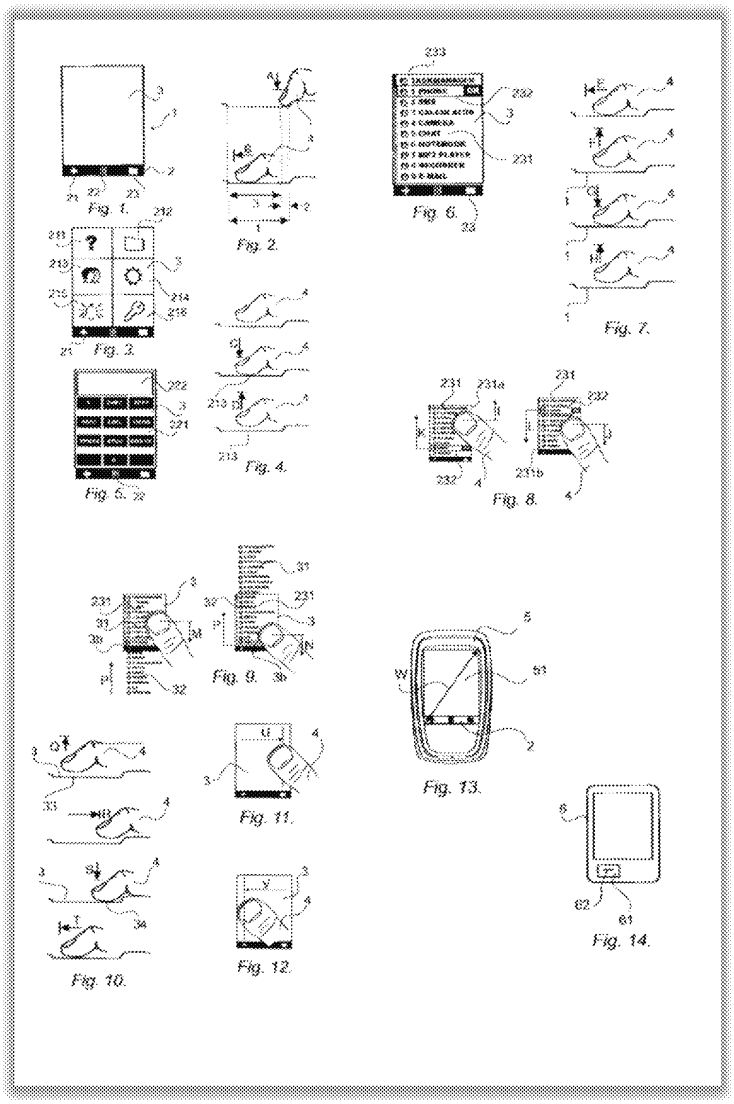
53. I have not seen any analysis in Dr. Wobbrock's declaration to show that Robertson is analogous art to the '879 Patent, and, therefore, there is no analysis for me to respond to in that respect. However, for completeness, I address below why Robertson is neither in the same field of endeavor as the '879 patent nor reasonably pertinent to the problem with which the '879's inventors were involved.

a. Petitioner Has Not Shown That Robertson Is In The Same Field Of Endeavor As The '879 Patent.

54. The '879's field of endeavor is "user interfaces for mobile handheld computer units" and is directed at "inexperienced users" using such consumer devices. The '879 is titled "User Interface For Mobile Handheld Computer Unit" and its Abstract explains that "[t]he present invention relates to a user interface for a mobile handheld computer unit …." The "Technical Field" similarly defines the invention as "relat[ing] to a user interface for a mobile handheld computer unit." *Id.*, 1:6-7. The '879 further explains that it seeks to address the problem of "providing a user interface that is suitable for small handheld computer units." *Id.*, 1:41-43; *accord id.*, 1:49-61. The '879's "Solution" is then presented "with the starting point from a user interface for a mobile handheld computer unit." *Id.*, 1:65-67. In describing the invention, the '879 also states that "[t]he user interface of the present invention is specifically adapted to be used with a small computer unit where the size of the touch sensitive area is in the order of 2-3 inches." *Id.*, 3:1-3. The '879 also highlights that one of the advantages of the invention "reside[s] in the ability to establish a user friendly interface for small handheld computers …." *Id.*, 3:10-15. In accord, every embodiment of the '879 addresses a user interface for a mobile handheld computer unit. *See, e.g., id.*, 3:50-51; Figs. 1, 11-14; 6:4-6.

55. This is reflected in all 14 of the '879's figures as well, each of which depict a mobile handheld computer unit, its interface, and/or a user interacting with the device's interface:

56. This is reflected in all 14 of the '879's figures as well, each of which depict a mobile handheld computer unit, its interface, and/or a user interacting with the device's interface:



57. Figures 3 and 13 (the '879's cover image), for instance, bear a striking resemblance to the Neonode N1:

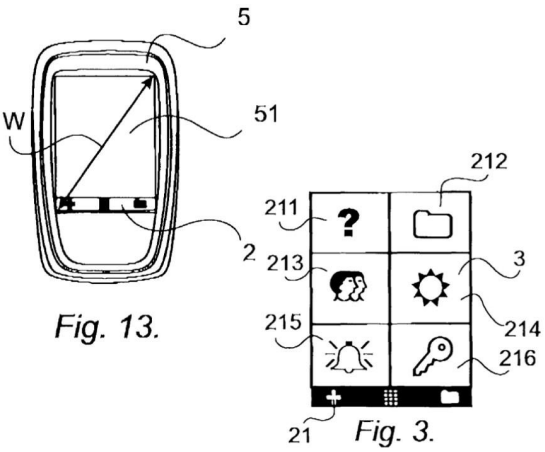


Fig. 13. Fig. 3.

58. The Applicant during prosecution also repeatedly referenced the features of the invention that make clear it is directed a mobile handheld computer unit. For example, the Applicant repeatedly explained that "the movement patterns described in the claims of the present application allow the use of the user interface with one hand only and navigation of the user interface with the thumb of that hand." Ex. 1002 [Prosecution-History] 82; 81 (similar), 116 (similar). The Applicant also further emphasized this point by explaining that while the prior art "[r]equires one hand to hold the device and another hand to perform the stylus movement," in the inventive system "[t]he same hand may be used to hold the device and perform the thumb movement." *Id.*, 301; *see also id.*, 339-340 (same). This operating the device with one hand, using the thumb to navigate the user interface is reflected in Figures

2, 4, 7-13. *See also* '879 Patent, 6:4-6 ("As shown in FIG.13, the present invention relates to a user interface for a hand held mobile unit that preferably can be manageable with one hand."); 3:1-6 ("The user interface of the present invention is specifically adapted to be used with a small computer unit where the size of the touch sensitive area is in the order of 2-3 inches[.] The user interface is also adapted to be operated by one hand, where the object can be a finger, such as the thumb, of a user of the computer unit.").

59. The commercial embodiment of the invention was similarly implemented in a mobile handheld computer unit, with a size of only a few inches, as shown in the screen shot below from Ex. 2020 [N2-Advertisement-Video] (0:10 sec.):

60. Unlike the '879, Robertson is not directed at a user interface for handheld mobile devices. Instead, Robertson's system is designed for a client-server

network of desktop computers in a setting such as a research laboratory, where collaborating users are sophisticated programmers who design XButtons and even share their designed XButtons together. *See also* ¶¶ 130-131, *infra* (discussion of X window system).

61. Robertson is a user interface kit that is custom-made for "an X window system ***desktop***." Robertson's title is "Buttons as First Class Objects on an X ***Desktop***" and its Abstract explains that "[a] high-level user interface toolkit, called XButtons, has been developed to support on-screen buttons as first class objects on an X window system ***desktop***." *Id.*

62. Robertson's summary of its paper similarly explains that "XButtons opens many possibilities for end-user tailoring ***of the desktop***." Ex. 1005 [Robertson] 43. Robertson further summarizes its paper as having "defined the notion of ***Desktop*** Buttons (DButtons), or first class button objects on a ***desktop***." *Id.* As previously noted, the word "desktop" appears approximately 40 times in Robertson, while the words "mobile" and "handheld" do not appear at all.

63. Therefore, a POSITA would have recognized that, unlike the '879's field of endeavor of a user interface for mobile handheld computer units, Robertson's field of endeavor is a user interface for X window desktops.

64. This distinction is highlighted by comparing a photo of a typical computer laboratory in early 1990s (*e.g.*, Robertson) and Neonode's handheld mobile unit:

[2]

b. *Petitioner Has Not Shown That Robertson Is Reasonably Pertinent To The Problem With Which The Inventors Of The '879 Patent Were Involved.*

65. As I mentioned above, I am informed that a reference may be analogous art to the patent if it is reasonably pertinent to the problem with which the inventors of the '879 patent were involved. I have been informed that in determining whether a reference is reasonably pertinent, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem then invention attempts to solve:

> A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem.

[2] http://scarc.library.oregonstate.edu/findingaids/?p=digitallibrary/digitalcontent&id=3038

> Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

In re Clay, 966 F.2d at 659.

66. Robertson is directed towards the problem of allowing an end-user to create and adapt user tailorable stand-alone buttons in an X windows system desktop:

> Physical buttons have been around since the first electrical devices were built. They are so common that we never think about them; push a button and some action will take place. On-screen buttons in one form or another have been around since the mid-1960's. Their appeal as a human computer interaction technique is obvious; arbitrary actions can be invoked by a simple interaction with a display object that looks pressable and the style of interaction is familiar to everyone. It is no surprise that many computer systems use on-screen buttons as part of their interface. ***On the other hand, very few systems provide buttons that stand on their own ("first class objects") or that allow an end-user to create and adapt buttons for their own needs. This kind of user tailorable button is what this paper focuses on.***

Ex. 1005 [Robertson] 35; *see also id.*, Abstract ("A high-level user interface toolkit, called XButtons, has been developed to support on-screen buttons as first class objects on an X window system desktop.").

67. In contrast, the '879 is directed towards the problem of creating a user interface in a small handheld computer unit that is: (1) "user-friendly" and adapted to handle a large amount of information and "different kinds of traditional computer-related applications," (2) that is "simple to use, even for inexperienced users," (3) that has "an easily accessible text input function," and (4) that "provide[s] a simple way to make the most commonly used functions for navigation and management available in the environment of a small handheld computer unit." Ex. 1001 ['879] 1:49-61; *see also*, 1:63-3:6 (describing "Solution" with focus on a simple to use user interface for a handheld mobile computer unit); 3:8 15 (describing "Advantages" as "Those advantages that can be primarily associated with a user interface or a computer readable medium according to the present invention reside in the ability to establish a user-friendly interface for small handheld computers …").

68. The problem addressed by the inventors of the '879 is completely distinct from the problems that Robertson seeks to address, which is a result of the '879 being directed at novice users of a consumer mobile handheld device, whereas Robertson is directed towards allowing users to create stand-alone tailorable buttons in an X windows desktop system. The '879 is not concerned with creating "first

class buttons." Ex. 1005 [Robertson] 35 ("very few systems provide buttons that stand on their own ('first class objects') …"). Nor is the '879 concerned with "user tailorable buttons." *Id.*, ("This kind of user tailorable button is what this paper focuses on."). Nor is the '879 concerned with providing buttons that support "multiple actions." *Id.*, Abstract. As I explain in ¶ 111, the reason Robertson's XButtons even support gestures is to permit them to provide users with multiple options of what action to initiate depending on the gesture. Otherwise, a simple tap or click was the general, standard way to activate a single-action button. In contrast, not only is the '879 not concerned with providing a user with multiple options of what action to activate on a buttons, but it expressly limits the invention to where "the representation consists of only one option for activating the function." Ex. 1001 ['879] cl. 1. In fact, this "advanced simplicity" and intuitiveness was a major point of praise among users of Neonode phones. Ex. 2031 [Trend-Hunter-Article] 1; Ex. 2013 [Pen-Computing-Magazine-N1-Phone-Review] 2-3.

2. The Robertson Combination Does Not Disclose Or Render Obvious The "Gliding … Away" Limitation.

69. The claims require "activating [a] function" via an "object" "***gliding*** along the touch sensitive area ***away*** from the touched location." As I previously discussed, the "gliding ... away" limitation (akin to swiping) was the subject of substantial public praise, commercial success, and licensing/acquiescence.

70. Dr. Wobbrock relies on two gestures in Robertson ("flick-right" and "insert") for the disclosure of "gliding … away." Ex. 1003 [Wobbrock-Decl.] ¶¶ 107-108. Dr. Wobbrock's arguments generally rely on the premise that "movement" and "gliding" are synonymous. Ex. 1003 [Wobbrock-Decl.] ¶ 107 ("This multi-step operation is shown below, where the user has touched the 'Phone' button (blue, representation) with the pen/stylus and ***moved (glided)*** the pen to the right along the touch-sensitive interface away from the initial touched location …."); *id*., ¶ 108 (similar). As I will explain below, the underlying premise that "movement" and "gliding" are synonymous is incorrect, and neither of flick or insert gestures disclose "gliding … away."

a. "Movement Is Not Synonymous With Gliding.

71. As discussed Neonode's phones received rapturous praise as a consequence of its swiping-based user interface and the Applicant equated "gliding" with "swiping" in prosecution. This confirms that the particular type of movement is critical in designing a user interface. While "gliding" is a certainly a ***type*** of "movement," it does not follow that ***any*** "movement" is "gliding," particularly in the context of touch-based user interfaces. A "chicken" is a bird, but not every bird is a chicken. The plain meaning as supported by basic logic confirms that Petitioner's assumption that "gliding" and "moving" are synonymous is incorrect.

Indeed, as I will discuss, numerous dictionaries confirm "gliding" and "moving" are not synonymous.

72. The intrinsic record reinforces this distinction. The prosecution history confirms that the claimed "gliding … away" is not simply any "movement" of the object (*e.g.*, thumb) away from the representation of the function. The pending claims during prosecution originally recited:

> "***moving*** in a direction ***from*** a starting point that is the representation [of a function] … ***to*** said display area."

Ex. 1002 [Prosecution-History] 201.

73. The "moving ... from ... to" limitation was rejected. In further prosecution and in explaining the gesture the Applicant sought to claim, the Applicant "encouraged" the Examiner to "watch the video demonstration of the N2 mobile phone/personal digital assistance device" "prior to reviewing Applicant's arguments." *Id.*, 214-215. As the screen shots from the video show, the "gliding … away" gesture is similar to what today's systems refer to as a "swipe" gesture, where, *e.g.*, the thumb is placed on a representation of a function (menu item with an arrow) and through a swiping motion, the menu screen opens:

See Ex. 2020 [N2-Advertisement-Video] (screenshots from 00:26-00:27).

74. In the subsequent office action, the Examiner acknowledged the "swiping" gesture of the claims, but recognized that the then drafted claims, simply required "moving" the object, and were thus too broad to limit the claims to a swipe/glide gesture. As the Examiner explained:

> The Examiner reviewed the demonstration as encouraged by the Applicant. ***In light of the video demonstration, the Examiner can now see the difference between the prior art of record and the present application.*** With that being said the Examiner feels that the limitations, as claimed, were reasonably interpreted and the current limitations are still too broad to suggest without research what was shown in the video demonstration.

Ex. 1002 [Prosecution History] 258.

75. In response to this guidance from the Examiner, the Applicant amended the claim from "***moving*** in a direction ***from*** a starting point that is the representation [of a function] … ***to*** said display area" to "***gliding*** along the touch sensitive area ***away*** from the location." *Id*., 317-318. The Applicant noted that the amendment was made after an Examiner interview "to properly claim the present invention."

Id., 334. This change from "move ... from ... to" to "gliding ... away" was therefore, significant.

76. Therefore, the underlying premise of Dr. Wobbrock's analysis that "moving" is synonymous with "gliding" is incorrect.

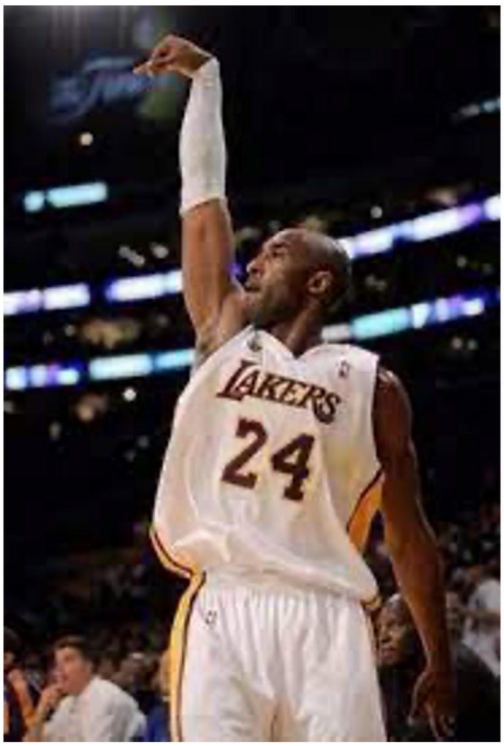
b. Robertson's Flick Is Not Shown To Be Gliding.

77. Dictionary definitions, both at the time of Robertson in 1991 and at the time of filing of the '879 patent in 2002, define "flick" and "glide" differently: a "glide" is a "smooth," and "effortless" motion, while a "flick" is a "sudden," "sharp" and "jerky" motion. Exemplary dictionary definitions are produced below:

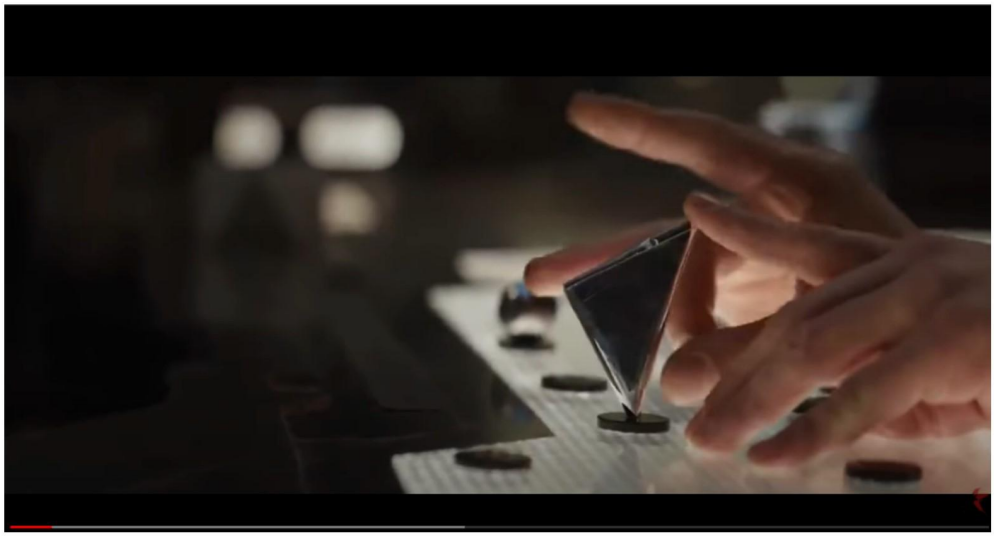
Dictionary		**"Flick"**	**"Glide"**
Merriam Webster [Ex. 2052]	1993	"a light sharp jerky stroke or movement"	"to move smoothly continuously and effortlessly"
American Heritage College Dictionary [Ex. 2050]	1997	"a light quick blow, jerk or touch"	"to move in a smooth effortless manner"
Oxford English Dictionary [Ex. 2057]	2002	"make or cause to make a sudden sharp movement"	"move with a smooth, quiet, continuous motion"
Oxford English Dictionary [Ex. 2049]	2012	"make a sudden sharp movement"	"move with a smooth quiet motion"

78. Further, in common usage, a "flick" is distinct from a "glide." Consider a flick of a finger:

or a flick of the wrist:

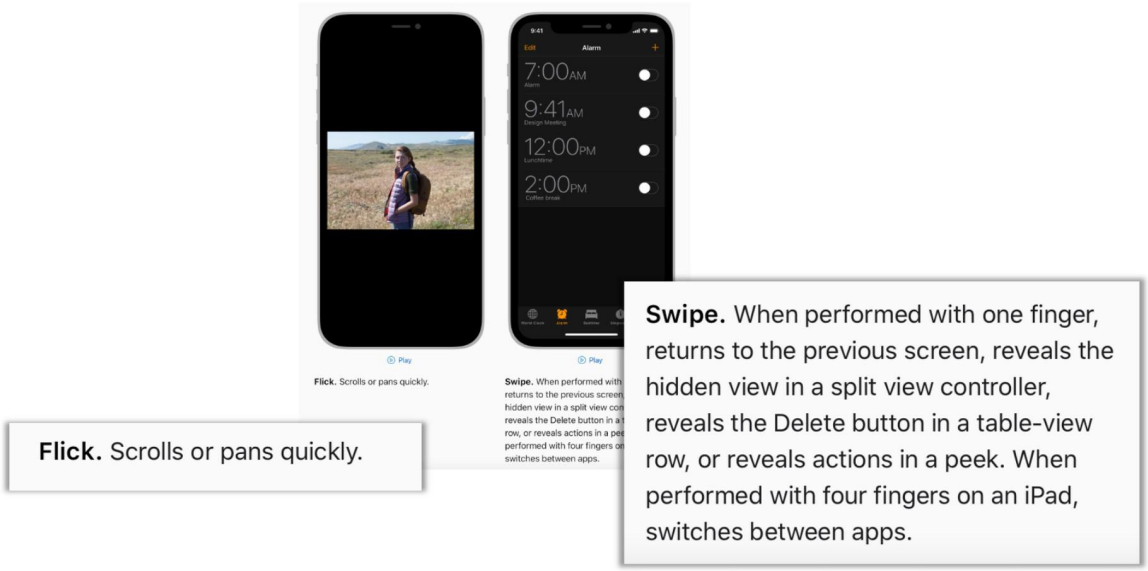


or the game “Flick Football”:



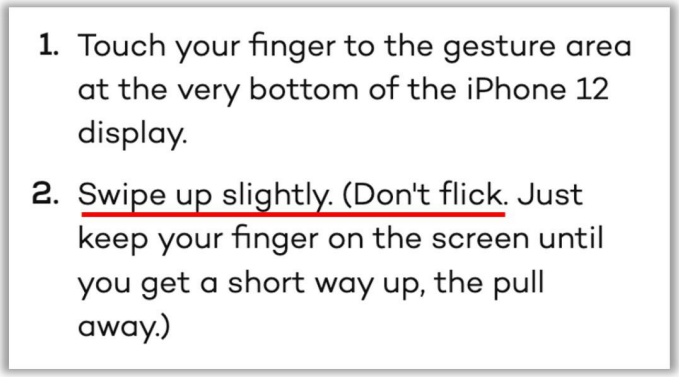
79. “Gliding” has a completely different plain and ordinary meaning:

80. "Flick" and "glide" gestures are also distinguished by smart phone developers such as Apple and Petitioner Google. Apple's developer guidelines for human interface, reproduced below, distinguish between a "flick" and a "swipe" as distinct gestures:



Ex. 2022 [Gestures] 4; *see also* Ex. 2029 [Terminology] 2 (identifying terminology used to describe various distinct gestures as "tap, flick, swipe, pinch, and drag.").

81. iPhone users similarly recognized the distinction between a "flick" and "swipe." For example, iMore, a popular website that provides detailed help guides, product recommendations and reviews, and other Apple related content, warns its users: "Swipe up slightly. (Don't flick. …)":


1. Touch your finger to the gesture area at the very bottom of the iPhone 12 display.
2. Swipe up slightly. (Don't flick. Just keep your finger on the screen until you get a short way up, the pull away.)

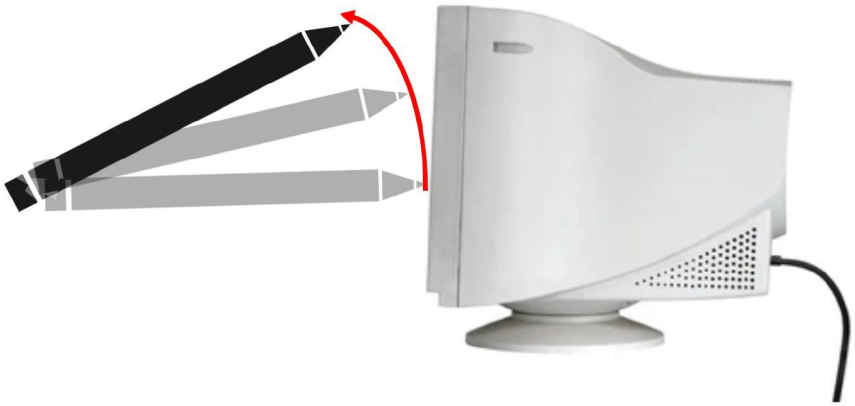
Ex. 2023 [iMore-Website] 6.

82. The Android operating systems developed by Petitioner Google also differentiate between a swipe and flick. For example, an Android application for cars recognizes a "flick" gesture in order to "simulate[] a fast spin of the rotary." Ex. 2025 [Test-Android-apps-for-cars] 21. Similarly, Petitioner Google in release of Android 4.0 distinguished between a user "flick[ing] through photo stacks," and a user "swip[ing] left or right." Ex. 2026 [Ice-Cream-Sandwich] 5.

83. In later releases of Android, it appears that the name of the "flick" gesture is changed to a "fling" gesture, but the same distinction between a swipe gesture and a flick/fling is maintained. For example, in some versions of Android, applying a "fling" gesture to a scroller creates a momentum effect where the scroller initially moves at a given velocity, and gradually slows down. Ex. 2027 [Scroller] 8. In contrast, a "swipe" gesture is used to close an application. Ex. 2028 [Navigation] 1.

84. Even though both a "swipe" and a "flick" involve moving the pen, they are distinct both in how they are applied as a user input gesture and their effects on the user—just as, for example, walking and running are similar and yet distinct movements. Both a "flick" and "swipe" may start by placing the finger at the same location on a touchscreen, and then moving the finger, but they differ in how the motion is applied: "gliding" as claimed (also known as swiping) is a relatively slower, smoother and longer motion, while "flick" is a sharper, faster and shorter movement.

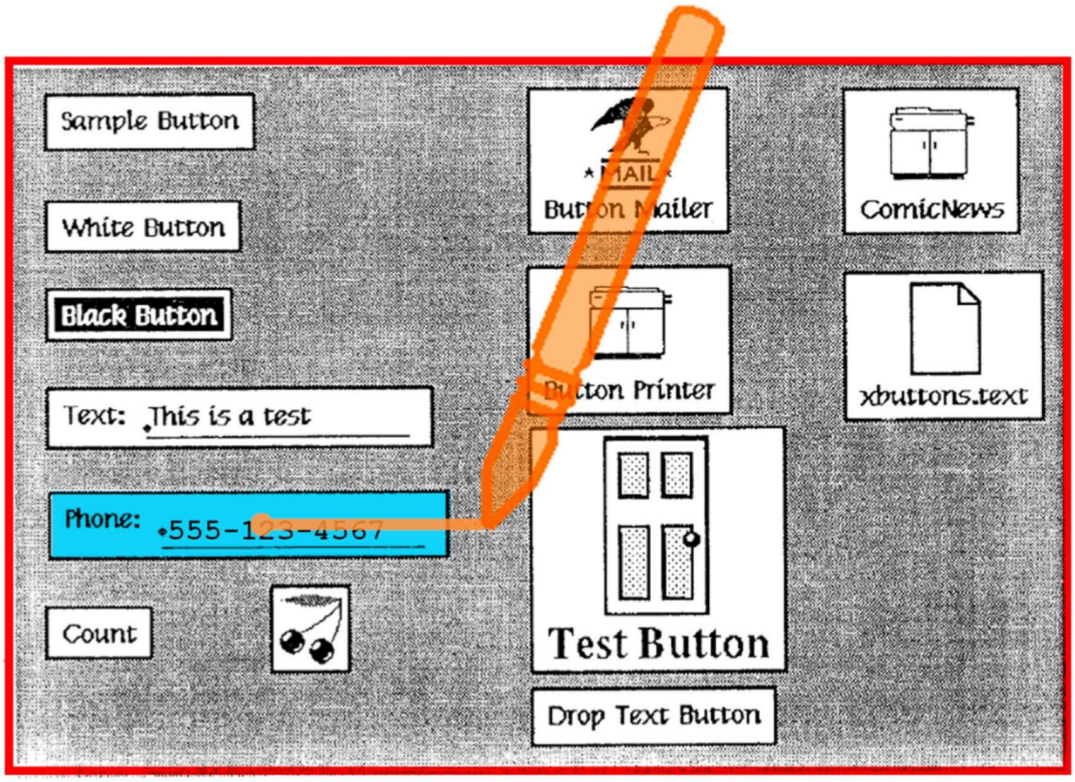
85. Consistent with the plain meaning in 1991, 2002 and even today, a POSITA would have similarly understood that Robertson's use of "flick" is also a jerky, quick and short motion that is distinct from a swipe gesture. The graphics below demonstrates the general shape of a flick gesture on a 1991 desktop based on the plain meaning of "flick":



86. In a flick gesture, the pen would touch the screen, but only moves on the screen for a very short distance and is quickly lifted from the screen in a "jerky"

motion. This is also consistent with how, for example, Apple uses the meaning of a "flick" gesture today. While the claims require an "object touching the touch sensitive area" and "the object gliding along the touch sensitive area" and therefore cannot be disclosed by mouse gestures, and while Petitioner does not rely on mouse gestures in Robertson, I note that in Robertson, even if the flick gesture were performed with a mouse, it would be a quick, jerky movement consistent with flick's plain meaning.

87. I also believe Dr. Wobbrock's depiction of Robertson's flick, reproduced below, is inaccurate:



Petitioner's Incorrect Depiction Of Robertson's Flick

Ex. 1003 [Wobbrock-Decl.] ¶ 107.

88. The movement of the pen shown by Dr. Wobbrock is substantially larger than what a flick, based on its plain meaning, would look like. Dr. Wobbrock appears to rely on Robertson's statement that a "gesture" "can," but need not, "move outside the XButton." Ex. 1005 [Robertson] 43. But that statement does not support Petitioner's deviation from the plain meaning of a "flick."

89. First, Robertson has many different gestures, and there is no reason to believe that its reference that some gestures "can" move outside of the XButton was

intended to refer to a "flick." Second, Robertson's statement that a gesture "can" move outside of the XButton is not intended to state Robertson's principle of operation of disclosing long gestures; to the contrary, it is stated to identify problems that occur if the gesture in fact moves outside of the XButton. Ex. 1005 [Robertson] 43. Moreover, given that a gesture can be initiated anywhere inside an XButton, Robertson's reference likely relates to instances where the gesture is initiated close to the edge of the XButton—not as Petitioner has shown, with no support, starting in the middle of the XButton and extending all the way outside of it.

90. Other indicia in Robertson similarly support the short, jerky nature of its flick, consistent with plain meaning. For example, Robertson also discloses that a drag-and-drop operation can be performed on its XButtons. Ex. 1005 [Robertson] 39, 40, 42. If Robertson's "flick" was really a glide, its system could not distinguish between the flick and a drag-and-drop. In other words, as a user placed the mouse/pen on an XButton, and moved the mouse/pen across the screen like a glide (a longer, continuous and effortless motion), then Robertson's system would not know whether the movement of the mouse/pen was a drag-and-drop operation or a glide gesture. In contrast, a "flick" gesture is readily recognizable due it its higher speed and shorter distance—which, as Robertson indicates, is not intended to (even if it "can") go outside of the XButton itself.

91. Therefore, I have not seen any evidence sufficient to prove that Robertson's "flick" discloses the claimed "gliding … away" gesture.

c. Robertson's Insert Gesture Does Not Disclose The Claims.

92. Dr. Wobbrock also relies on Robertson's "insert" gesture for the disclosure of the claimed "gliding … away." Ex. 1003 [Wobbrock-Decl.] ¶ 108. Robertson describes this gesture to be "like an editor's caret." Ex. 1005 [Robertson] 40. But the "insert" gesture does not disclose the claims for two separate reasons.

i. Robertson's Insert Gesture Does Not "Activate" A "Represented" Function.

93. The claims require that the "gliding … away" gesture activate the function that is "represented" by the "representation of a function" upon which the gesture is performed:

> A touch sensitive area in which ***a representation of a function is provided***, wherein the representation consists of only one option for activating the function and wherein ***the function*** is ***activated by a multi-step operation*** comprising …

Ex. 1001 ['879] cl. 1.

94. For example, the '879 provides three examples of representations of functions, *i.e.*, the first ("general application dependent function"), second ("keyboard function") and third ("task and file manager") functions, identified in Fig. 1 as items 21-23, respectively:

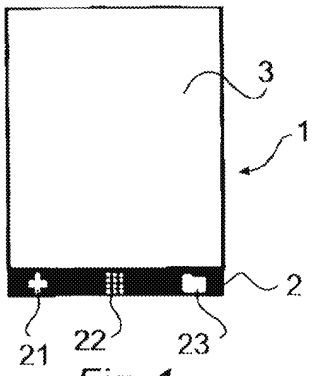


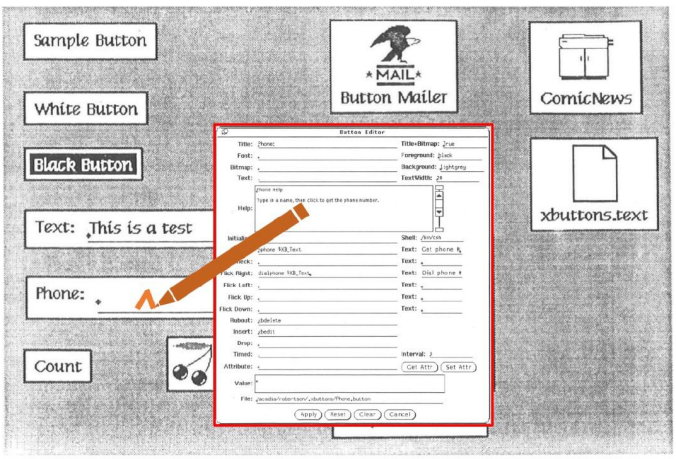
Fig. 1.

95. Ex. 1001 ['879] Fig. 1. In each instance, a "gliding … away" gesture activates the "function" for which the representation is placed on the screen and which is "represented" by the "representation of the function." For example, representation 21 represents the function of displaying various applications available on the phone, and gliding away activates that function. *Id.*, 4:4-6, 4:13-23, Fig. 3. Similarly, representation 22 represents the function of displaying a keyboard and gliding away activates that function. *Id.*, 4:36-38, Fig. 5.

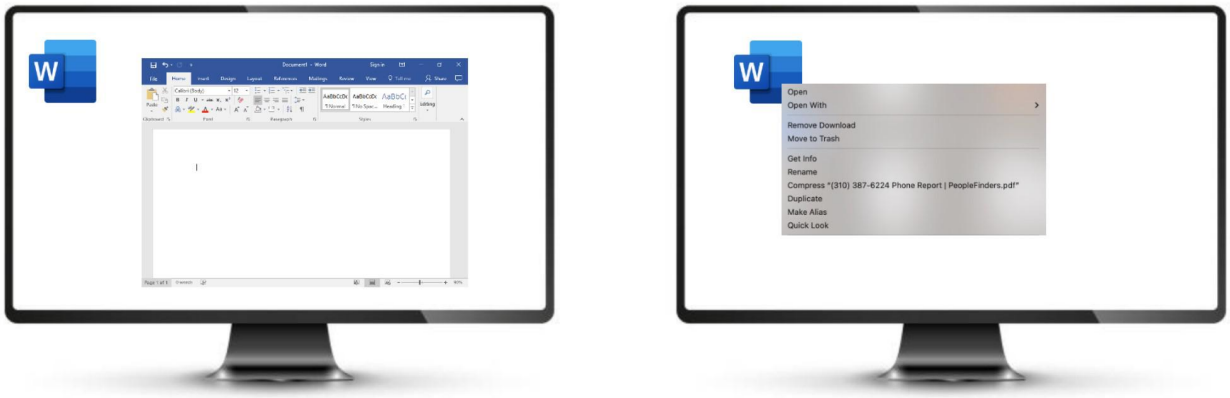
96. Robertson's "Insert" gesture does not activate the represented function. In Robertson, "[t]he Insert gesture (made like an editor's caret) defaults to *xbedit,* which invokes the structured button editor." Ex. 1005 [Robertson] 40.

97. When the insert gesture is performed on ***any*** XButton, the button editor for that Button is opened, which permits the user to modify the button by, for example, changing its name. *Id.*, 41. A POSITA would not have considered Robertson's Phone XButton (or any of the other XButtons shown by Robertson) to

be a representation of *xbedit* and opening of a button editor. The Phone XButton is not there so that a user can open the edit window for that Button; rather, it is there so that the user can dial a phone or look up a contact—and ***that*** is the function the XButton represents. The button edit feature is a part of the mechanics for the XButton's user interface so that any given XButton can be edited. In accord, the *xbedit* structured button editor window can be opened in connection with ***any*** XButton by applying the insert gesture. *Id.*, 41. Thus, as shown below, when the caret gesture is performed on the Phone XButton, a phone number is not dialed, or the phone number of a contact is not shown; rather, the button editor appears to allow the user to format the XButton:



98. The Phone XButton does not represent xbedit any more than the Microsoft Word icon on a Microsoft Windows desktop "represents" the function of right clicking on the icon, a default set of items appearing regardless of the icon:



A Microsoft Word Icon represents the function of opening a MS Word document (left), not the action of right clicking on it to rename, delete or copy the icon (right).

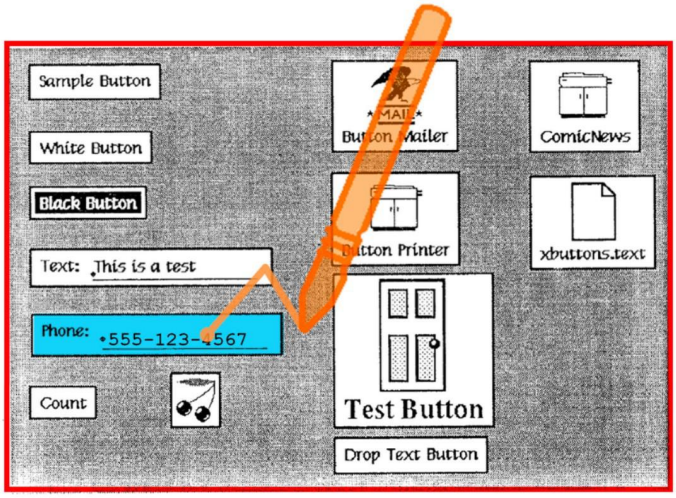
ii. Petitioner Does Not Show That Robertson's "Insert" Is "Gliding … Away."

99. Robertson describes this gesture to be "like an editor's caret." Ex. 1005 [Robertson] 40. An editor's caret—"^"—has a sharp angle and is usually smaller than the text.

100. In terms of either mechanical movement or user feel, and for much of the same reasons as "flick," the "insert" gesture does not resemble a "gliding …

away"/swiping gesture. Insert, like "flick," is a jerky movement—in this case two jerky movements connected together. This is apparent by the sharp edge of an insert gesture. If one were to attempt drawing the insert gesture with a pen, while keeping the overall size of the gesture small enough to be interpreted as a gesture on a screen, with a sufficient speed such that a typical device would recognize that as a single gesture, one would experience drawing a first sharp, short line, and then sharply changing direction and drawing a second sharp, short line. Just like flicks, these sharp, jerky lines of an insert are very different from "gliding … away."

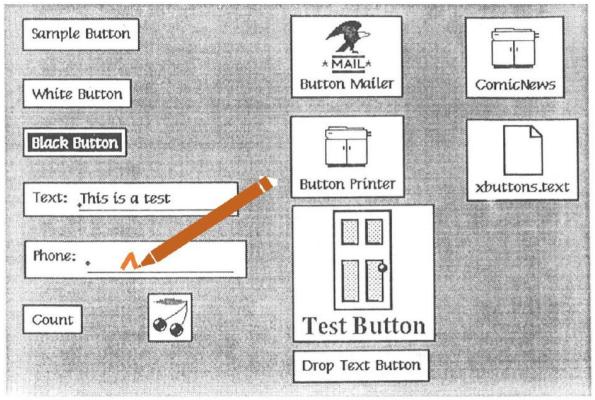
101. I also disagree with Dr. Wobbrock's depiction of the caret gesture in Robertson, produced below:



Petitioner's Incorrect Depiction Of Robertson's Insert Gesture

Ex. 1003 [Wobbrock-Decl.] ¶ 108.

102. In accordance with its plain usage, a caret gesture would more closely resemble the following depiction:



3. The Robertson-Grounds Do Not Disclose "Wherein The Representation Consists Of Only One Option For Activating The Function."

103. The limitation "wherein the representation consists of only one option for activating the function" was added during prosecution to overcome Hirshberg. Ex. 1002 [Prosecution-History] 514-515, 535, 540-544.

104. Hirshberg discloses a system directed at enabling the use of a full alpha-numerical keyboard utilizing the limited number of soft keys that could fit on a small screen. Ex. 2030 [Hirshberg] ¶ [0003]. Hirshberg describes that each soft key on the screen can potentially represent multiple characters, and the direction of the movement of the finger after touching a specific key would determine the specific character that would be typed. *Id.*, ¶¶ [0056]-[0058]. For example, in the annotated version of Hirshberg's Fig. 2A below, once the stylus/finger touches the softkey, if the stylus/finger moves up towards zone 300, then the letter H will be typed. *Id.* Similarly, if the stylus/finger moves right towards zone 302, then the letter I will be

typed. *Id.* Letter G and number 4 are similarly typed by moving to the left and downwards, respectively. Thus, in Hirshberg, the representation of the function (the soft key) provides the user with multiple options on what action to take depending on the input gesture.

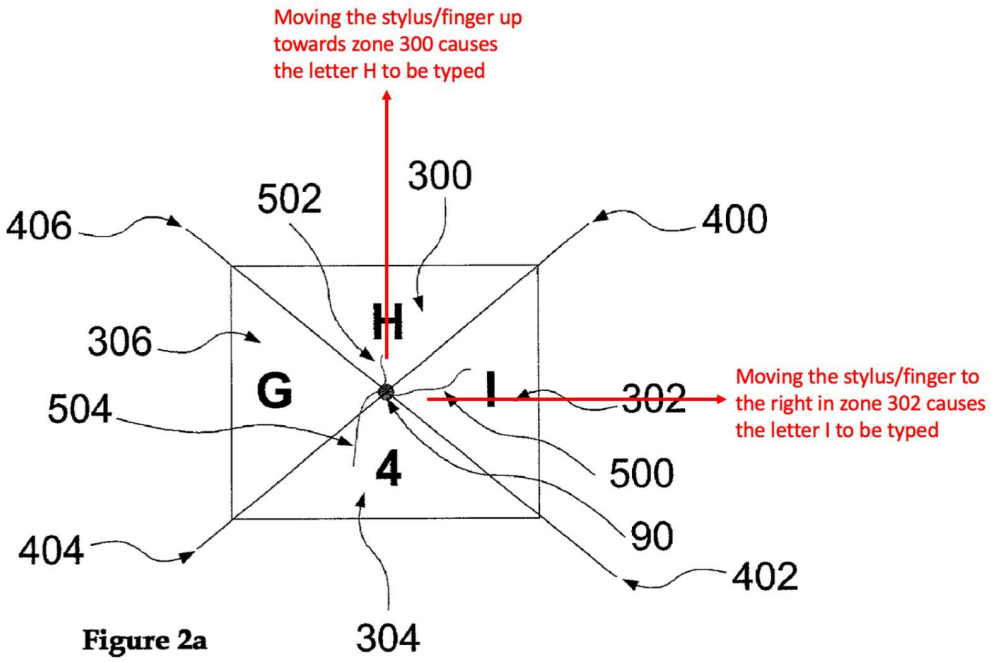


Figure 2a

105. The Applicant distinguished Hirshberg by this amendment:

> In order to further distinguish the claimed invention over Hirshberg, applicant […] amended claim 1 to include the limitation that the representation of the function consists of only one option for activating the function.

Ex. 1002 [Prosecution-History] 542. Thus, the Applicant required that there be only a single option with respect to the representation of the function regardless of the direction of "gliding … away."

106. Dr. Wobbrock applies an incorrect understanding of the one-option limitation in asserting that Robertson discloses it. Specifically, Dr. Wobbrock interprets the one-option limitation to require that each function associated with the representation of the function can be activated only by one gesture. Ex. 1003 [Wobbrock-Decl.] ¶ 104 ("Robertson's 'Phone' button (blue) activates the 'dialphone' function (green) by only a 'flick right' gesture (orange).").

107. However, Robertson is just like Hirshberg. Robertson's XButton provides the users with multiple options to choose from for what action to activate, depending on the gesture applied to the XButton: showing the telephone number (click), dialing the telephone number (flick right). Ex. 1005 [Robertson] 40-41. Petitioner's expert does not dispute the relevant aspects of the operation of Robertson. Ex. 2018 [Wobbrock-Depo.] 79:17-22 ("In the example that is shown in Figure 3, there are four distinct gestures that map to four distinct commands."); 78:19-20 (same).

108. In this respect, Robertson is just like Hirshberg, and the claims of the '879 were amended with the one-option limitation to distinguish '879 from Hirshberg. Specifically, just as each of Hirshberg's soft keys depicted multiple distinct letters and provided the user with the option of which letter to choose from depending on the input gesture, Robertson similarly provides the user with several options of which action to activate with a given XButton depending on the input

gesture. Therefore, a POSITA would understand that Robertson fails to disclose the one-option limitation for the same reason that the USPTO determined that Hirshberg fails to disclose the one-option limitation.

109. In this respect, both Robertson and Hirshberg represent the prior art upon which Neonode improved and was praised. For example, users praised Neonode's user interface for its "advanced simplicity" and "intuitive" gestures. Ex. 2031 [Trend-Hunter-Article] 1; Ex. 2033 [tnkgrl-Media-post] 1. One aspect of this simplicity is the one-option limitation where the user does not have to memorize a host of gestures to choose from, and the function associated with each. Instead, the user can select one option on the representation of the function.

110. Furthermore, providing the user with multiple options for selecting what to activate in an XButton is a fundamental feature of Robertson, and one of the points of advancement of Robertson over its predecessor system called Rooms:

> Rooms Buttons have a single action that results from pressing the button. ***XButtons support multiple actions***. Some actions are based on gestures. That is, there are a number of possible actions that can result from interacting with the button, and the nature of the interaction determines the action.

Ex. 1005 [Robertson] 36.

111. Robertson then continues to list "support[ing] multiple actions" as "[***an***] ***additional goal***[] for XButtons." *Id.*, 37. In accord, Robertson does not disclose any embodiment where there is only one option presented to the user with respect to what action to perform on the XButton. Notably, had Robertson desired its XButtons to support a single action, there was no need for it to rely on gestures (such as the flick gestures) as a simple tap could have activated the single action XButtons. Similarly, even if a POSITA for some reason would modify Robertson such that its XButtons are associated with a single action, Dr. Wobbrock has not presented any reason why a POSITA would have chosen the flick gesture, a gliding gesture, or the cumbersome insert gesture for that single action, as opposed to, for example, the much simpler and faster click.

4. Robertson-Grounds Do Not Disclose Or Render Obvious The Preamble For Two Reasons.

112. Claim 1's preamble requires a "a mobile handheld computer unit" to read a computer program code and display the resulting user interface, is limiting. I am informed by Neonode attorneys that "In considering whether a preamble limits a claim, the preamble is analyzed to ascertain whether it states a necessary and defining aspect of the invention, or is simply an introduction to the general field of the claim." *On Demand Mach. Corp. v. Ingram Indus.*, 442 F.3d 1331, 1343-44 (Fed. Cir. 2006). I am also informed that "a preamble constitutes a limitation when the elements in the body of a claim depend on it for antecedent basis."

Salesforce.com, Inc., v. VirtualAgility, Inc., CBM2013-00024, Paper 47, 13 (PTAB Sept. 16, 2014). It is my opinion, as discussed below, that the preamble is limiting.

113. The claims, the specification and prosecution history all confirm that a "mobile handheld computer unit" is a defining aspect of the invention. As I explained in connection with the "field of endeavor" of the '879, the title, abstract and field of invention of the '879 all expressly recite a "user interface for a mobile handheld computer unit." *See* ¶¶ 54-59, *supra*. The Patent further explains that it seeks to address the problem of "providing a user interface that is suitable for small handheld computer units," and then continues to provide a solution "with the starting point from a user interface for a mobile handheld computer unit." *Id*., 1:41-42, 1:49-61, 1:65-66. All embodiments of the Patent relate to a user interface which "is specifically adapted to be used with a small computer unit where the size of the touch sensitive area is in the order of 2-3 inches." *Id*., 3:1-3; *see also id*., 3:10-15; 3:50-51, 6:4-6; Figs. 1, 11, 12, 13, 14. Similarly, the Applicant during prosecution repeatedly emphasized that the invention is designed to be operated with one hand, *i.e*., is a handheld mobile computer unit. *Id*., 301; *see also id*., 339-340 (same). Therefore, a POSITA would readily recognize that "a mobile handheld computer unit" is a necessary and defining aspect of the '879 Patent's invention.

114. Furthermore, most dependent claims rely on the "user interface for the mobile handheld computer unit" in Claim 1's preamble as an antecedent basis. *See*

Ex. 1001 ['879 Patent] cl. 3 ("wherein ***the*** user interface is characterized in …"); cl. 4 ("causes ***the*** user interface to display …"); cl. 6 ("… ***the*** mobile handheld computer unit."); cl. 7 ("wherein the user interface is characterized in …"); cl. 8 ("wherein the user interface is characterized in …"); cl. 9 ("wherein the user interface is characterized in …"); cl. 10 ("wherein the user interface is characterized in …"); cl. 11 ("wherein the user interface is characterized in …"); cl. 12 ("wherein the user interface is characterized in …"); cl. 13 ("wherein the user interface is characterized in …").

115. For the foregoing reasons, a "mobile handheld computer unit" in the preamble of Claim 1 is limiting.

a. Robertson-Grounds Fail To Disclose Or Render Obvious "A Mobile Handheld Computer Unit."

116. Dr. Wobbrock relies on Robertson or, in the alternative, the combination of Robertson and Maddalozzo, for the disclosure of "a mobile handheld computer unit." However, as I will explain below, Robertson is very clear that its system is a desktop system, and not a "mobile handheld computer unit." Furthermore, as I will also explain below, Dr. Wobbrock does not show why a POSITA would have been motivated to implement Robertson's XButtons in a "mobile handheld computer unit" of Maddalozzo.

i. Robertson Does Not Disclose Or Suggest "A Mobile Handheld Computer Unit."

117. As I explained in detail in ¶¶ 60-63, Robertson is addressed towards a "desktop" not on a "mobile handheld computer unit." Robertson's title is "Buttons as First Class Objects ***on an X Desktop***" (Ex. 1005 [Robertson] 35) Robertson's system is "[a] high-level user interface toolkit, called XButtons, [that] has been developed to support on-screen buttons as first class objects ***on an X window system desktop***." *Id.* Robertson refers to a "desktop" ~40 times but never to a "mobile" or "handheld" device.

118. Dr. Wobbrock states that "Robertson discloses a computer unit for presenting its user interface for "pen-based gestural input[s]," but does not specify the type of computer unit." Ex. 1003 [Wobbrock-Decl.] ¶ 87. On that premise he states that "Robertson's user interface with 'pen-based gestural input[s]' suggests to one skilled in the art that the device could be a mobile handheld computing unit." *Id.*

119. Dr. Wobbrock's premise and conclusion are both incorrect. As shown above, Robertson clearly and repeatedly describes his system as a desktop system. While Robertson does mention that "XButtons support mouse-based or pen-based gestural input in addition to simple 'pressing,'" Ex. 1005 [Robertson] 39, this simply indicates that pen-based input may also be used in Robertson's desktop system instead of a mouse. In fact, Robertson clearly states that its gesture is input by

"mouse or pen." *Id.* 39 ("XButtons have multiple actions, which are selected by simple mouse or pen gestures."); *id.* ("Whenever a user gestures at an XButton, a gesture parser interprets mouse or pen movement and classifies it *as* one of a small set of easily differentiated gestures (flick left, flick right, flick up, flick down, click, rubout, check, or insert)."

120. Petitioner also relies on Robertson's statement that the programming language corresponding to the action taken by the button after the input gesture is preferably the Unix commands entered through a Unix shell, but can also be Lisp. Ex. 1005 [Robertson] 39, *cited* by Pet., 13.[3] Petitioner then concludes that because Robertson discloses multiple potential programming languages for its action programming, then "Robertson suggests that the computing device can be a mobile handheld computer unit." Pet., 13. But the choice of programming language between Unix commands via the Unix shell and, for example, Lisp, says nothing about Robertson's expressly disclosed desktop system being a mobile handheld computer unit. These programming languages are not exclusively, or even likely, implemented on a mobile handheld computer unit.

[3] Other references to Lisp in Robertson are in the context of discussing other systems. *See, e.g.*, Ex. 1005 [Robertson] 36-37.

ii. *Dr. Wobbrock Does Not Show Why A POSITA Would Have Implemented Robertson's XButtons In Maddalozzo's Device.*

121. In the alternative, Dr. Wobbrock relies on importing Robertson's XButtons on a mobile handheld device as allegedly disclosed by Maddalozzo for the disclosure of a "mobile handheld computer unit." Ex. 1003 [Wobbrock-Decl.] ¶ 80. However, Dr. Wobbrock does not show why a POSITA would have been motivated to make this combination.

122. Maddalozzo describes a "portable computer" that allows the user to type and edit text documents without the use of a physical mouse or keyboard. Ex. 1006 [Maddalozzo] Abstract, 2:33-36, 5:31-42, 6:20-35. Maddalozzo's device, with text document 82 open, is shown in its Fig. 4, reproduced below:

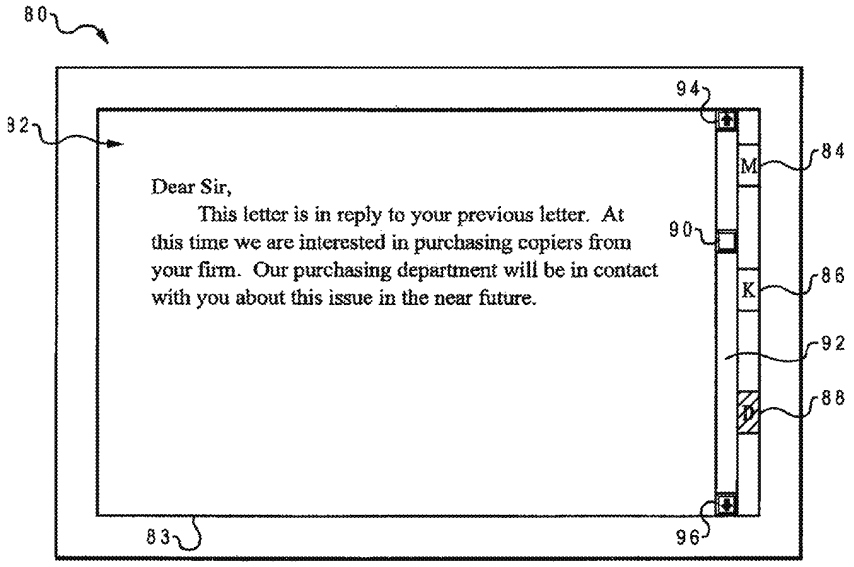


Fig. 4

123. Maddalozzo's device contains three keys. Key M (84) causes the device to go to the "mouse" mode, which presents a mouse cursor on the screen, but can be operated by fingers instead of the mouse to move the cursor. Ex. 1006 [Maddalozzo] 6:15-35; Fig. 6. Key K (86) takes the device into the keyboard mode, where a keyboard is presented on the screen when the user puts his/her hands on the bottom half of the screen. *Id.*, 6:36-52. Key D (88) takes the device to the normal display mode. *Id.*, 6:17-19.

124. Dr. Wobbrock argues a POSITA would have been motivated to implement Robertson's XButtons in Maddalozzo's system because both references are "directed to touch-based user interfaces" and have certain alleged similarities. Ex. 1003 [Wobbrock-Decl.] ¶ 90. But Robertson is not "***directed*** to touch-based user interfaces;" Robertson is "focuse[d]" on user tailorable first class objects on X window system desktops. Ex. 1005 [Robertson] 35. Whether or not the system is touch-based is irrelevant to Robertson, which states only that its gestures can be input with a "mouse or pen." *Id.*, 39.

125. Dr Wobbrock's additional proposed motivations fundamentally rest on the unproven presumption that Robertson's XButtons are "simple[r]," "more convenient" or "more useful" for the user. Ex. 1003 [Wobbrock-Decl.] ¶¶ 91-93. But Dr. Wobbrock does not attempt to show that (or how or why) XButtons are simpler, more convenient or more useful in Maddalozzo's already fully-functioning

system. There is no showing that Robertson's "first class desktop objects" have any utility in Maddalozzo nor explanation of how Robertson's multi-action XButtons, requiring numerous gestures, are "simpler" or "more convenient" than Maddalozzo's pre-existing interface.

126. Furthermore, Maddalozzo is already a complete system. It is already a portable system with a small form factor. Ex. 1006 [Maddalozzo] Abstract, Fig. 1. It already functions without a physical mouse or keyboard. *Id.*, 6:20-48. It already provides a simple, user friendly interface. *Id.*, Fig. 4.

127. Petitioner also argues that "Robertson's teachings would have been implemented on X-based handheld devices (e.g., laptop computers, PDAs) to take advantage of operations the 'Unix Shell' command language provides to design gesture-based buttons that are more useful and convenient for users." Pet., 17. But Petitioner provides no analysis as to why any of these asserted benefits have any application to, or improve, Maddalozzo's system. Notably, unlike Robertson's system where users may design XButtons in its more research-oriented setting, whether through a Unix command window ("Shell") or otherwise, Maddalozzo's end-users could not redesign Maddalozzo's user interface, which are already pre-designed and already installed on the device.

b. Petitioner Does Not Show That Robertson-Grounds Disclose Or Render Obvious The Claimed Computer Program Code Being "Read By A Mobile Handheld Computer Unit."

128. The claims require that the "computer program code" that results in the presentation of the claimed "user interface" be "read by a mobile handheld computer unit." In other words, the processor that executes the code to display the claimed user interface must be on the same mobile handheld computer unit that displays the user interface.

129. Dr. Wobbrock relies upon Robertson's user interface computer program code, but (correctly) does not allege that Robertson's code is stored on the same device that displays the resulting user interface, arguing instead that a POSITA "would have found it obvious to store Robertson's user interface computer program code in a non-transitory computer readable medium of the laptop, PDA, or other handheld computing device to keep the program code being executed in the same device as the device executing it to provide a unitary system," arguing further that this was "conventional." Ex. 1003 [Wobbrock-Decl.] ¶ 86.

130. Dr. Wobbrock's proffered motivation fails because providing a "unitary system" or the alleged "convention" of storing the computer program code on the same device displaying the user interface is at odds with central aspects and benefits of the X window system. Robertson describes a user interface toolkit developed "to support on-screen buttons as first class objects on an X window desktop." Ex. 1005

[Robertson] 35. The use of the X window desktop system is integral to Robertson, as it achieves its objective of "first class desktop buttons" through the use of the X window desktop system. *Id.*, 38 ("XButtons breaks free of this dependence on an embedding application by providing buttons as first class objects on the X desktop."). Unlike the claimed invention, the X window system is designed for a distributed, not a "unitary" environment.

131. The X window system (also referred to as just "X" or "X11") is a network-transparent windowing system. That means that it allows the system to "de-couple" the display of the user interface from the processor and the application that provides the information to be displayed. A typical use case for the X window system is where there is a high power computer ("main frame") located centrally in a network, and then there are numerous "thin" clients scattered around the network at user locations. The "thin" clients have very limited processing capabilities of their own, but are a monitor, keyboard, and mouse that send the user input information to the remote, centrally located computer for processing, and then display the results back to the user once received from the central computer. The X window system provides multiple benefits. First, it allows a large system to save resources by providing only one central processor (e.g., a mainframe) for use by all the users, with each user station having only a thin client device. Second, it allows the users to work collaboratively on the same applications and datasheets and see the same results

from the central processor. This is also confirmed by the book on X window systems submitted by Dr. Wobbrock, Ex. 1027 [X-Window-System] 33.

132. Dr. Wobbrock provides no explanation why a POSITA would choose to utilize an X window system and then un-do its primary purpose of de-coupling processing and display (the opposite of a unitary system), or why it was "conventional" to do so.

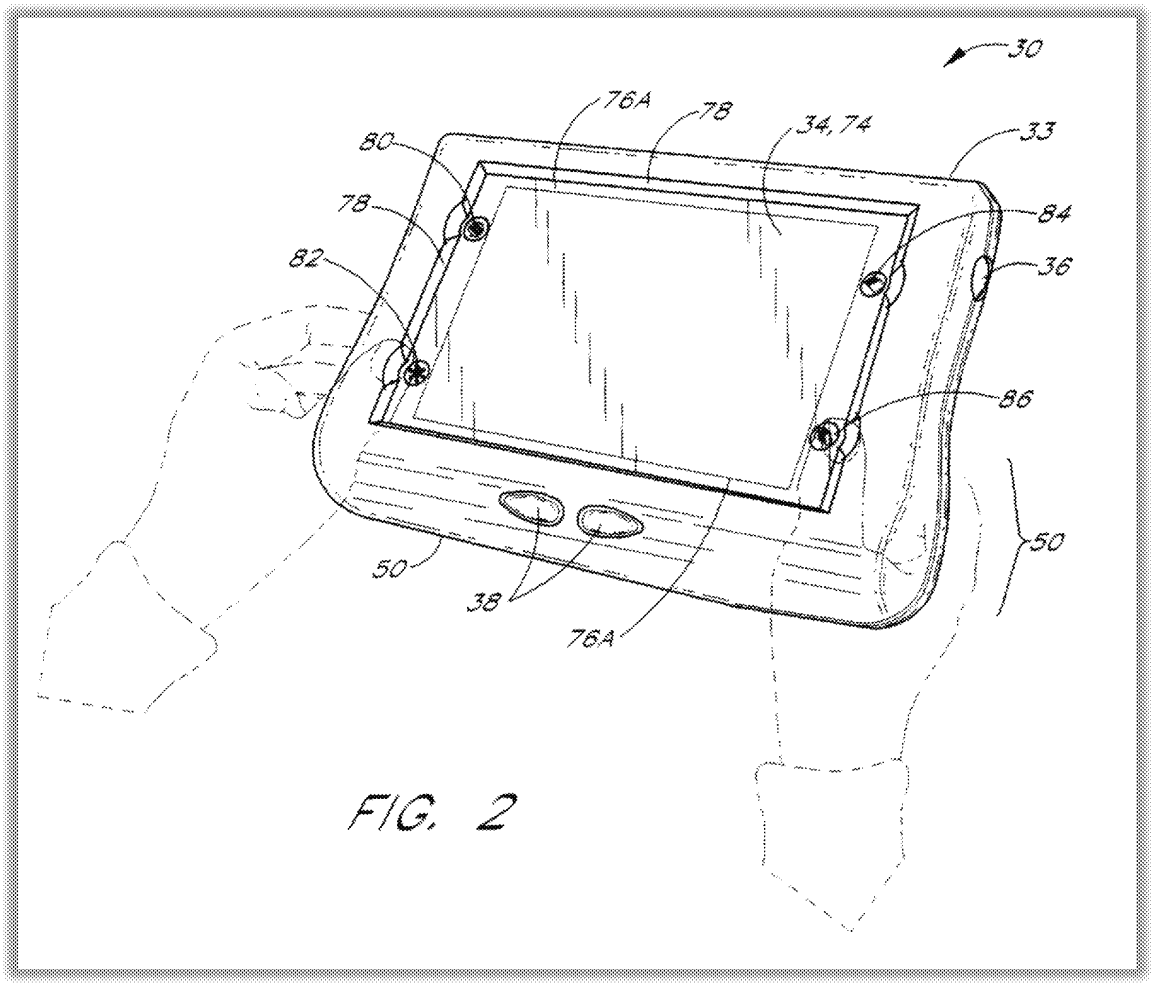
133. Robertson further confirms the above, by explaining that its display is not on the same device executing the XButton code. Robertson uses the same traditional, de-coupled X window client-server environment. In Robertson, the remotely executing application determines the user interface, including whether XButtons are used, as well as the details of those XButtons, displayed on the user's display. Ex. 1005 [Robertson] 42.

C. The Tarpenning Grounds Do Not Disclose The Claims.

134. The Petition presents Grounds 4-6 based on Tarpenning but only Ground 4 (obviousness in view of Tarpenning alone) challenges independent claim 1 with Grounds 5-6 depending upon it. Ground 1 is based on obviousness in view of Tarpenning alone. As I will explain below, however, the concept of "gliding … away" simply does not appear anywhere in Tarpenning. Furthermore, Dr. Wobbrock does not present any reason why a POSITA would even consider, let alone be

motivated, to replace Tarpenning's touch activation with activation by "gliding … away."

135. Tarpenning discloses an e-reader that includes four keys (80, 82, 84, 86), each of which is recessed within a housing, as shown in reproduction of its Fig. 2:



136. Each of Tarpenning's keys is activated by pressing a key, not by "gliding … away":

> When the user ***presses*** the book menu key 84 or the library menu key 86, the device 30 displays a book menu 85 (FIG. 6) or a library menu (not shown), respectively.

Ex. 1009 [Tarpenning] 6:41-43.

137. "Gliding … away" is entirely absent from Tarpenning. Nor does Tarpenning use any of the terms glide, gliding, swipe, swiping or any similar word. Attempting to remedy this deficiency, Petitioner argues that Tarpenning actually discloses "gliding … away" in a different context when it uses a drag-and-drop operation to assign a function to its hotkey by dragging the hotkey and dropping it on the function that is desired to be assigned to it. Pet., 78-79. But dragging the hotkey does not "activate the function" as required and, moreover, a drag-and-drop operation is not the claimed "gliding … away."

138. Key 82 in Tarpenning is a hotkey, which means that a user can assign a custom function to it. Ex. 1009 [Tarpenning] 6:36-38. The user can assign a specific function to the hotkey by dragging the hotkey and dropping it on the desired function to be assigned to it, or, conversely, by dragging the desired function and dropping it on the hotkey. *Id.*, 7:39-48, 8:1-4, Abstract. For example, in a reproduction of Tarpenning's Fig. 7, a user can assign a desired function, such as "Add Note" to the hotkey by dragging the hotkey 82 and dropping it on the "Add Note" item:

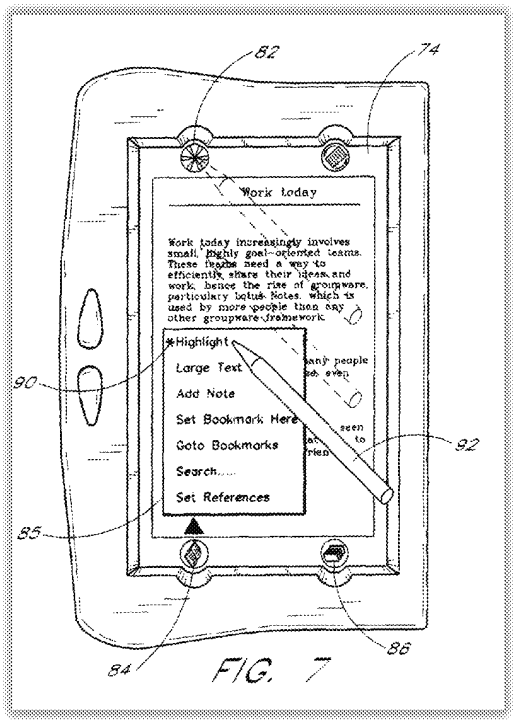


FIG. 7

139. Petitioner relies (Pet., 79-80) on this drag-and-drop operation to argue that Tarpenning discloses the concept of activating a key by "gliding … away." This argument fails for at least two reasons. First, this assignment procedure does not "activate" anything—it merely assigns the desired function to hotkey 82, which is then activated by the user by pressing the key, not by "gliding … away." In fact, Tarpenning never refers to its drag-and-drop operation as "activating" anything, but as, for example, "defining a function" for the hotkey. Ex. 1009 [Tarpenning] 7:39-41, 8:1-3.

140. Second, a drag-and-drop is fundamentally different from "gliding … away." "Gliding … away" is a swipe that activates a function. In contrast, in a drag-and-drop operation, some form of the item is logically dragged (and behaves as if it

is being logically dragged) with the movement of the stylus and is dropped at the location where the stylus leaves the screen. This is also confirmed by the prosecution history.

141. During prosecution, in distinguishing the Hoshino reference, the Applicant made clear that "gliding ... away" is distinct from "drag-and-drop" operations:

> ***Hoshino does not teach gliding*** a finger ***away*** from an icon. ***Instead,*** ***Hoshino teaches a drag-and-drop operation*** for moving an icon.

Ex. 1002 [Prosecution-History] 498.

142. Accordingly, the Applicant distinguished Hoshino's "conventional" "drag-and-drop" "operation" from the "novel" "touch-and-glide" operation of the "[c]laimed invention":

Some distinctions between claimed invention and Hoshino		
	Claimed invention	**Hoshino**
Objective	Novel touch-and-glide user interface operation	Discriminate between two conventional operations; namely, (1) touch, and (2) drag-and-drop

Id., 497.

143. The Petition also does not show disclosure of claims because it does not provide any reason why a POSITA would even consider, let alone be motivated, to replace Tarpenning touch activation with activating by "gliding … away."

144. Petitioner first argues that a POSITA would have substituted Tarpenning's touch activation with "gliding … away" "to prevent users from accidentally opening the menu when they inadvertently touch the screen with their finger or heel of their hand, which would lead to frustration." Pet., 82. Petitioner does not show this motivation for at least three reasons.

145. First, Petitioner fails to prove that accidental activation is even a problem in Tarpenning. Nothing in Tarpenning hints at an accidental activation concern. Tarpenning's touch-sensitive display is recessed within a hard housing. Ex. 1009 [Tarpenning] 6:4-6. The four keys in question are further recessed within semicircular cutouts within the hard casing. *Id.*, Figs. 2, 6-7. Accidental activation of keys within this structure is unlikely.

146. Second, even such concerns were proven, there is no evidence that a POSITA would substitute tap activation with "gliding … away" as opposed to a host of other gestures. No explanation is given for how "gliding … away" would be less likely to result in accidental activation, or that "gliding … away" was a known activation method to address accidental activation, or that why a POSITA would even consider "gliding … away" as a potential solution to accidental activation.

147. Third, "gliding … away" in Tarpenning's context has drawbacks that Petitioner does not consider. For example, activating a key with a simple touch is a simpler design and easier in Tarpenning's context than "gliding … away."

Tarpenning is a two-handed device and performing a "gliding … away" with a finger (Ex. 1009 [Tarpenning] 7:44-48) would require the user to extend his/her thumb uncomfortably:

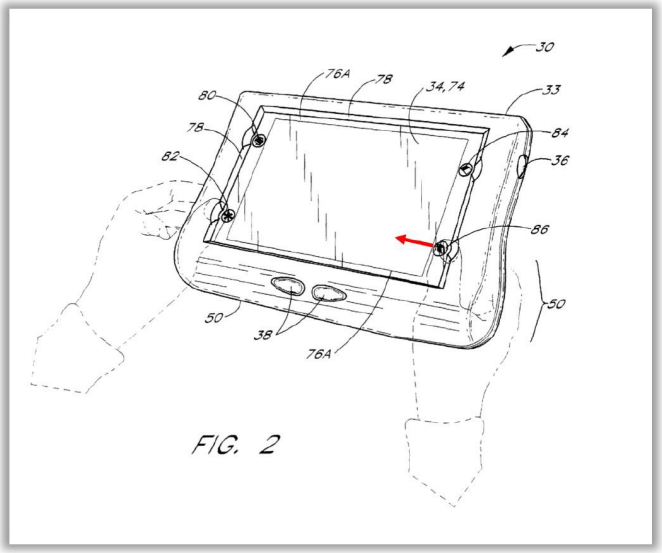


FIG. 2

148. As the second proposed motivation, Petitioner argues a POSITA would have substituted Tarpenning's touch activation with "gliding … away" "to allow users to more accurately open sub-menus by gliding up to the desired sub-menu location without lifting the stylus or finger off the screen, which results in faster, more efficient operations for a user." Pet., 82. This is also incorrect.

149. First, the entire idea of using "gliding … away" to navigate within menu and sub-menu items does not appear anywhere in the record. More fundamentally, however, the premise to this motivation fails. Touch activation of a submenu function would be faster and more accurate than gliding away. This is so because

touch activation of a sub-menu item merely requires that the user touch a sub-menu location on the display, whereas gliding away activation would require the user (i) touch the key for that menu to open the sub-menu, then in the same gesture (ii) glide on the display to the location of the desired sub-menu item and then lift off at the desired location. This continuous movement is especially difficult where the user is holding the device in the landscape, as opposed to upright, position (see annotation above), as the menu has to be accessed by moving the finger to the left and right, as opposed to moving up.

150. Furthermore, it is well known in the human factors community that touch activation of an icon is typically the fastest means of activating an associated function, and it would be here as well.

151. Petitioner's proposed modification is also less user-friendly. A typical use scenario is where the user is holding the device with one hand, and then trying to navigate the menus with a stylus in the other hand. Once the stylus touches a key and moves towards the screen in order to open the menu (per Petitioner's modification), the user would then have to keep the device in one hand, and maintain the stylus in the same position on the screen with the other hand, while the user reviews the menu items to choose the particular options he/she wishes to choose. In contrast, in touch activation, the user simply touches the key, and then can lift his/her hand/stylus from the screen while contemplating the next steps.

V. CONCLUSION

152. For the foregoing reasons, based on my expertise and experience and the record of this case that I have reviewed, it is my opinion that the Challenged Claims are not shown to be disclosed or obvious.

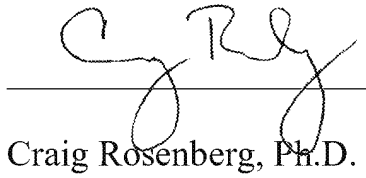
153. I understand that my opinions discussed above support a legal conclusion that the challenged claims are nonobvious.

In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

I hereby declare that all statements made herein of my own knowledge are true and all statements made herein on information and belief were and are believed by me to be true, and that all statements herein were and are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that any such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Respectfully submitted,

Dated: April 21, 2022



Craig Rosenberg, Ph.D.